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ABSTRACTS

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HortFlora Research Spectrum

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2. Johnson, D.A. (1940). *Plant Microtechnique*. McGraw- Hill Publishing Co. Ltd., New York. PP-29
3. Kapil, R.N. and Arora, S. (1990). Some fascinating features of orchid pollen. *J. Orchid Soc*., **4** (1): 9-28.
4. Rashid, S., Ashraf, M., Bibi, S. and Anjum, R. (2000). Antibacterial and antifungal activities of *Launaea nudicaulis* Roxb. and *Launaea resedifolia* L. *Pakistan J. Biol. Sci.*, **3** (4) :630-632.

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ABSTRACTS

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(ABSTRACTS)

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1. Comparison of Productivity and Cost of Timber Extraction by Farm Tractor, Skidding vs. Forwarding in Northern Iran

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ABSTRACT : This paper presents research results of the comparing timber extraction using a farm tractor at two different methods including forwarding and skidding. Time studies were conducted to qualify the productivity and the operational cost of logs forwarding and skidding by farm tractor in *cut-to-length* and tree length method in a plantation in even terrain conditions in Shafaroud, Northern Iran. Farm tractor is commonly machines which are used in many part of Iran as Northern part. The models for effective time consumption, total productivity and work phase models are calculated. The time consumption and productivity of log extraction with a farm tractor depends on several variables such as distances and slope, number of logs per cycle and volume. The average load per cycle was 3.84 m^3 and 0.5 m^3; the average one-way skidding distance was 167 and 233 m, in the forwarding and skidding, respectively. The average travel speeds of unloaded tractor were 4.54 km/h and the average speeds of loaded tractor were 0.39 and 0.82 km/h in forwarding and skidding, respectively. The average output was 3.44 and 1.07 m^3/effective hour; the average cost was 5.86 and 19.7 US$/$m^3$ for forwarding and skidding, respectively.

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2. Comparing Digital Image Analysis and Visual Rating of Gamma Ray Induced Perennial Rye Grass (*Lolium perenne*) Mutants

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ABSTRACT : To generate variability in perennial rye grass and to select genotypes responsive to low management, gamma-ray irradiation was used for induction of dwarfness and other quality attributes. The main objective of this study was to identify changes and correlations among turf visual rating and digital image analysis in evaluating turf grass quality under different treatments. Differences were significant among irradiated population with respect to hue angle, brightness and saturation. The correlations of hue and DGCI were significantly positive with all the parameters of visual rating. There were non-significant correlation of brightness with quality and texture, and saturation and texture. The DGCI values were in tune with each of these parameters when the slope of regression line was significantly different from zero ($p<0.05$). These relationships were better in DGCI and hue (r^2 = 0.3531) DGCI and saturation (r^2 = 0.3017); DGCI and brightness (r^2 = 0.1196) and DGCI and colour (r^2 = 0.1725). Non-linear relationship was noticed between DGCI and quality (r^2 = 0.0004).

Published in : *HortFlora Research Spectrum*, 3 (3) : 211-217 (September 2014)

3. Chipping and Nutritional Quality of Potato Cultivars Grown in North Indian Plains

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ABSTRACT : Ten potato cultivars, commonly grown in North Indian plains were evaluated for processing and nutritional quality. Within the cultivars studied, Kufri Chipsona-1, Atlantic and Lady Rosetta were rated as the best varieties for processing into potato chips, since these contained the highest amount of dry matter content, lowest amount of reducing and total sugars and produced chips of desirable colour, texture and flavour. While Kufri Pukhraj, a table variety, which was found unfit for processing was considered highly suitable for direct consumption since it contained the highest amount of bioactive compounds including ascorbic acid, total phenolics and total antioxidant activity.

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4. Quality and Biochemical Changes in Film Packaged Kinnow Mandarin during Ambient Storage

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ABSTRACT: The effect of four heat shrinkable films viz., D955 (12 micron), D955 (15 micron), Opti-Max and Xenith, with or without treatment of Sodium carbonate (3%) or Thiophanate methyl (0.1%) was evaluated for individual wrapping of Kinnow (Citrus *nobilis* Lour x *Citrus deliciosa* Ten.) fruits to maintain their shelf life under ambient conditions (temperature: 12° to 18°C & RH: 55 to 70%). The lowest physiological loss in weight was in the fruits treated withThiophanate methyl (0.1%)+Xenith film, and the highest shriveling was observed in unwrapped fruits after 60 days of storage. The weight loss increased with the advancement of storage period. Colour development was not adversely affected any heat-shrinkable film and colour retention was better in fruits sealed in D955 (12 micron) and HDPE (10 micron) after 30 days of storage. Highest titratable acidity was retained in fruits treated with Opti-Max followed by Thiophanate methyl (0.1%) + Opti-Max film. TSS : acid ratio decreased as the storage period advanced. The maximum ascorbic acid content was recorded in the fruits treated with Thiophanate methyl (0.1%) +Xenith film. During storage, the major change in internal quality observed was a reduction in acidity and ascorbic acid, and increase in total soluble solids and total sugars of fruits. Changes in acidity, sugars, TSS and ascorbic acid of the shrink-wrapped fruits were lower than that of non-wrapped fruits during 60 days of storage under ambient conditions.

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5. Genetic Variability and Association Studies in Single and Double Cross F_2 Population of Okra

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ABSTRACT : Two populations of the okra viz., single cross F_2, and double cross F_2 were developed using BH-1, BH-2, BH-3, BH-4, BH-5 and BH-6 lines. The objective was to determine the genetic variability, nature of association among different yield attributes and their direct and indirect contribution towards yield. It was observed that mean squares due to genotypes were significant for all the traits, indicating the presence of genetic variability in the experimental material. The values of PCV were higher than that of GCV values for all the twelve characters indicating influence of environmental effects in the expression of these characters and it was found more in DC F_2 as compared to SC F_2 population. The GCV, heritability and genetic advance were higher for plant height, fruit yield per plant, fruit weight and days to 50 per cent flowering which might be attributed to additive gene action of inheritance in DC F_2 population. From the correlation and path coefficient analyses, it revealed that the top priority should be given to selection based on numbers of fruit per plant, fruit length, fruit diameter and fruit weight for yield improvement and could be considered while formulating selection indices in the improvement of okra. Path coefficient analysis revealed that fruit weight had maximum direct contribution (0.869) towards fruit yield followed by number of fruits per plant (0.323) and fruit length (0.079). This revealed that DC F_2 population showed more variability compare to SC F_2 because it involves diverse parents in its development compare to SC F_2 population.

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6. Standardization of Efficient Indirect Plant Regeneration Protocol in Brinjal (*Solanum melongena* L.)

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ABSTRACT : The auxins viz.2,4-D, NAA alone or in combination to BAP ($1.0mgl^{-1}$) did not induce good quality callus. More than 1ppm IBA formed less and quite compact callus at cut ends with rooting only after two weeks. IBA ($0.5\text{-}2.0\ mgl^{-1}$) + 1.0 mg/l BAP increased the mass of pale white, compact, nodular callus with embryogenesis in ten days that differentiated on the callusing media. With IBA and BAP, hypocotyl induced 100.00% callus on all the MS media combinations ($1.5mgl^{-1}$ IBA + $1.0mgl^{-1}$ BAP, $1.0mgl^{-1}$IBA +$1.0\ mgl^{-1}$BAP and $0.5mgl^{-1}$IBA + $1.0mgl^{-1}$BAP), while cotyledons produced maximum callus on MS with $1.5mgl^{-1}$IBA + $1.0mgl^{-1}$BAP (97.03%). However, cotyledon induced 95.64% somatic embryogenesis on MS +$1.5mgl^{-1}$ IBA +

1.0mgl^{-1} BAP followed by leaf (94.10%). Hypocotyl had no somatic embryogenesis on MS media fortified with conc. of 1.5 mgl^{-1}IBA + 1.0mgl^{-1}BAP, which could be increased with further decrease in IBA levels. Callus induced by NAA, 2,4-D and IBA auxins suppressed shoot bud initiation, while IBA +BAP induced callus diverted towards differentiation into shoots on higher levels of BAP+ kin. Furthermore, organogenesis was not observed in the callus induced from the hypocotyl, whereas it was maximum in cotyledon (55.02%) followed by leaf (44.57%) on MS medium supplemented with 2.5mgl^{-1}BAP + 1.0mgl^{-1}kin + 0.2% activated charcoal.

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7. Cause and Effect Relationship to Identify Important Yield Conributing Traits in Saffron (*Crocus sativus* L.)

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ABSTRACT: The present investigation was carried out at Saffron Research Station Pampore, SKUAST-Kashmir during 2010. Fifty clones were planted in a randomized bock design with three replications. Observations were recorded on 10 randomly selected and tagged competitive plants for 11 morphological, physiological, floral and corm attributes.viz, plant height (cm), number of radical leaves per plant, stomatal frequency, stomatal size (microns), chlorophyll content (%), number of flowers per corm, fresh pistil weight per corm (mg), pistil length (cm), stigma length (cm), number of daughter corms/ mother corm, and average weight of daughter corms per mother corm (g). The path analysis revealed that pistil length recorded highest direct effect towards fresh pistil weight followed by plant height and stigma length. Rest of the traits as number of flowers recorded weak positive direct effects and the negative direct effect of number of radical leaves plant^{-1} on the dependant variable. However in case of corm attributes in saffron (*Crocus sativus* L.), average weight of daughter corms/ mother corm exerted negative direct effect on number of daughter corms/mother corm, while as size of stomata showed strong positive direct effect on number of daughter corms/mother corm.

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8. Effect of Storage Duration on Rooting of Carnation (*Dianthus caryophyllus* L.) Cuttings

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ABSTRACT : Studies on the effect of storage on rooting of carnation (*Dianthus caryophyllus* L.) cuttings were carried out during 2011-12 on four commercial carnation cultivars viz. 'White Wedding', 'Farida', 'Niva' and 'Madras'. A basal dose of 20-5-5 g/m^2 of NPK was applied before planting and the plants were fertigated with 200 ppm N + 280 ppm K twice a week. Results revealed that cuttings stored for 7 days resulted in minimum percentage of weight loss (3.48 %) and maximum cost benefit ratio (1:3.55). However, carnation cuttings stored for 7 days and 14 days resulted in 100 per cent rooting. The studies also indicated that carnation cuttings may be stored up to 35 days at 2°C without significant change in quality and quantity of cuttings.

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9. Effect of Postharvest Treatments on Shelf life of Litchi Fruits (*Litchi chinensis* Sonn.) cv. Rose Scented

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ABSTRACT : Research was carried out to evaluate the influence of various post harvest treatments on litchi fruits under cold conditions. Cold conditions increased the shelf life of litchi to 18 days. Among all the treatments, Oxalic acid (10 %) dip was most effective in retaining postharvest quality and reducing physiochemical losses. It resulted in minimum browning index (55.47) and spoilage percentage (10.14%). Physiological weight loss was also reduced to minimum (3.72%) in fruits treated with Oxalic acid (10%).

Among the chemical parameters, maximum ascorbic acid content(17.69 mg/100g) and TSS (21.940Brix) were also recorded in Oxalic acid(10%) treatment.

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10. Studies on Simultaneous Grafting and Rooting of Peach on Flordaguard Rootstock

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ABSTRACT : The present study was conducted with a view to evaluate the rooting capacity of simultaneously grafted 'Flordaguard' rootstock with the aid of IBA treatments and to find out optimum time and concentration of IBA. Highest sprouting success in both Shan-e-Punjab and Earli Grande peach cultivars were recorded in 2000 ppm IBA treatment. Vegetative growth in terms of plant height & stem thickness and root growth was also found to be maximum in this treatment. Thus, it is concluded that peach plants can be propagated through simultaneous grafting and rooting on Flordaguard cuttings in 2nd week of January by dipping the basal portion of cuttings in 2000 ppm IBA for 2 minutes. This practice cut short the period of propagation by one year.

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11. Response of Different Sterilants, Phenol Binding Agents and Antioxidants on *in vitro* Establishment of Guava (*Psidium guajava* L.)

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ABSTRACT : Techniques were standardized for minimizing microbial contamination and leaching of phenols in the media for quick establishment of cultures in guava. The maximum number of aseptic explants with higher survival was obtained by sequential application of ethanol (70%) for 30 second, $HgCl_2$ (0.1%) for 5 minutes, KCl (1%) for one minute and NaOCl (1%) for 8 minutes. The problem of phenolic browning was successfully minimized to a great extent by supplementing MS media with various concentrations of antioxidant and phenol-binding agents. Citric acid at 500 mg/l in the culture medium reduced phenolic exudation the most and promoted the best survival of explants. Initial incubation of cultures under varying levels of light intensity showed escapement upto certain limit from phenolic browning of the media. The lowest frequency of browning of media was observed with cultures which were incubated in complete dark for 72 hours, however maximum survival was recorded with 24 hours of dark period.

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12. Effect of Gamma Rays on Vegetative and Flowering Parameters of Gerbera (*Gerbera jamesonii* Bolus Ex Hooker F.)

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ABSTRACT : The suckers of nine gerbera varieties namely RCGH-12, RCGH-22, RCG-12, RCG-18, RCG-7, RCG-19, RCGH-117, RCGH-38, and RCG-10 were exposed to gamma rays treatments (1.5 Kr; Source ^{60}Co).These gamma irradiated suckers along with untreated suckers were planted under low cost polyhouse. The radio- sensitivity of these varieties was determined on the basis of various vegetative and floral characteristics of the treated plants. The findings indicated that gamma radiation treatment @ 0.5 Kr had significantly detrimental effect on plant height, number of leaves, flower stalk length, flower duration and number of flowers per plant per year in all varieties studied.

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13. Relative Performance of Citrus Rootstocks to *Phytophthora nicotianae var. parasitica* Causing Root Rot

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ABSTRACT: *Phytophthora* root rot is the most important soil borne disease of citrus causing mortality, slow decline and yield loss. To combat this serious disease problem, a total of twelve rootstocks viz. NRCC-1, NRCC-2, NRCC-4, NRCC-5, NRCC-6, CRH-12, Rangpur Lime (Abohar), Rangpur Lime (Akola), Rangpur lime Shrirampur, Rough lemon (Abohar), Rough lemon (Akola) and Marmalade orange were evaluated under artificial epiphytotic conditions. All the tested rootstocks showed a great variation in their tolerance to *Phytophthora* infection. The root rot index ranged from 1.64 to 2.62.

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14. Drip Irrigation Scheduling in Okra [*Abelmoschus esculentus* (L.) Moench]

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ABSTRACT : A field experiment on drip irrigation scheduling in okra was undertaken for two consecutive years (2002-04) at ICAR Research Complex for Eastern Region, Patna. The experiment was conducted in split-split plot design with irrigation water equivalent to 100, 80 and 60% ET (Evapo transpiration) in main plots and water as per daily, alternate days and once in three days schedule in sub-plots, two varieties Arka Abhay and Arka Anamika in sub-sub plots. Observations regarding plant height (cm), internodal length (cm), average fruit weight, yield (q/ha) and water use efficiency (q/ha^{-cm}) was undertaken. Irrigation at 80% ET gave significantly higher yield during both the years. The first year schedules were not significantly different though daily application recorded higher yield, but significant difference among the schedules were observed during second year and daily irrigation gave significantly higher yield than once in two days and three days schedules. Maximum water use efficiency was recorded at 60% ET treatment during both the years. Maximum plant height and average fruit weight was associated with cultivar Arka Abhay, while Arka Anamika registered minimum internodal length. Between two varieties tested Arka Abhay proved best in terms of yield than Arka Anamika during two consecutive year of experimentation.

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15. Rejuvenation of Nagpur Mandarin (*Citrus reticulata* Blanco.) Through Top Working

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ABSTRACT : The experiment was carried out at the farmers' field at Nimoda and Ummedpura villages, Jhalrapatan, Jhalawar during the year 2009-10. Eight years old declining plants of Nagpur Mandarin were subjected to different time of top working. It was observed that 15th October time of budding had significantly better effect on budding performance, growth and in turn rejuvenation of plants. Maximum bud take per cent (75.80%), minimum days required to first sprouting (18.27 days), minimum days required to 50 per cent sprouting (53.26 days) and the maximum budding success (70.23%) were recorded in 15th October budding time. Under this treatment maximum length of sprout shoot (14.19cm), diameter of sprout shoot (4.97), number of nodes (11.04), length of internodes (1.29cm), number of leaves on sprout shoots (15.23), leaf area (15.23 cm^2), perimeter of leaves (20.25cm) and chlorophyll content (3.704 mg/g) were noted.

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16. Glory Lily (*Gloriosa superba* L.) : An Important Medicinal Crop–A Review

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ABSTRACT : *Gloriosa superba* L. is an important medicinal plant of Asia and Africa, used in treatment of several diseases. It is cultivated for its seeds for extraction of colchicine and colchicoside forming the principal source of drugs. In India, Tamil Nadu holds monopoly in production of glory lily. There is a need to standardize the production technology which may help to improve the yield, quality and net returns per unit area. The present review is focused on production practices of *Gloriosa superba* L.

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17. Sensory Gardens for Disabled: A Review

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ABSTRACT : The sensory garden is one of the theme garden that stimulates the five senses *viz.* touch, smell, hear, taste and sight which provides benefit from young children to senior citizens as well as those physically and mentally challenged. This garden is also called by several names like sound garden, touch and smell garden therapeutic garden, disabled garden. These gardens concentrates on a wide range of sensory experiences, if designed well, will provide a valuable resource for a wide range of users, ranging from education to recreation. Historically, sensory gardens have evolved gradually from the traditional concept of 'Garden for Blinds' to sensory landscapes. Here all components, (hard and soft landscaping, colours, textures and forms), must be carefully chosen and designed to appeal to the senses in such a way that they provide maximum sensory stimulation. This idea is to integrate green areas that will encourage sensory stimulation, physical mobility and social skills along with environmental education, emotional growth and mental development, rather than making special provision for disabled.

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18. Performance of Various Plant Growth Regulators on Yield and Quality of Phalsa (*Grewia asiatica* L.)

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ABSTRACT: The present investigation on "performance of various growth regulators on yield and quality of phalsa (*Grewia asiatica* L.)" was carried out at the Fruit Research Station, Junagadh Agricultural University, Junagadh. The experiment was laid out in Randomized Block Design (RBD) with three replications. There were ten treatments comprised of NAA (100, 150 and 200 ppm), GA_3 (50, 100 and 150 ppm), Ethrel (500, 750 and 1000 ppm) and control (water spray).The results of experiment revealed that an application of NAA 150 ppm significantly increased number of flowers per shoot (151.21), number of fruits per shoot (60.74), 100 fruits weight (49.80 g), juice percentage (57.78 per cent) and the maximum yield of fruits (1.71kg/plant and 5800 kg/ha) followed by NAA 200 ppm. The quality of fruits in terms of TSS (25.23 per cent), reducing sugar (2.01 per cent) and total sugar (5.74 per cent) were significantly higher in treatment with Ethrel 1000 ppm followed by Ethrel 750 ppm. Further, Ethrel 1000 ppm also significantly reduced the span of harvesting (9.76 days) and number of pickings (3.57) followed by Ethrel 750 ppm. An application of GA_3 150 ppm significantly reduced acidity (2.55 per cent) and increased ascorbic acid content (39.50 per cent).

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19. Impact of Front Line Demonstration of INM on Growth and Yield in Tomato

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ABSTRACT : A field experiment was conducted at the Farm of Krishi Vigyan Kendra Pampoli, East Kameng, Arunachal Pradesh. The effect of Integrated Nutrient Management (INM) on the growth, yield and contributing nutrient status in tomato. By following a randomized complete block design, 9 treatments with 3 replications were maintained. The study revealed that the integration of organic manures in combination with inorganic fertilizers was found significant in improving the overall plant growth, yield and soil macro nutrient status than the sole application of either of these nutrients. Maximum plant height and number of leaves per plant were observed with treatment 14.33 mt/ha FYM + 7.20 mt/ha Vermicompost + NPK. The earlier of days to 50%

flowering was observed in treatment 20 mt/ha FYM. Highest number of fruit clusters, maximum fruit weight and fruit yield (26.74 mt/ha) were recorded in treatment 14.33 mt/ha FYM + 7.20 mt/ha Vermicompost + NPK. The highest available nitrogen, phosphorus and potassium were found in treatment of ½ NPK + 15 mt/ ha vermicompost.

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20. High Density Planting System in Tropical Fruits

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ABSTRACT : HDP is one of the novel methods to achieve high productivity per unit area both in short duration and perennial horticultural crops. High yield and high fruit quality can be achieved with a high-density orchard when the orchard has good light distribution throughout the tree canopy and there is a balance between vegetative growth and cropping. Planting density is one of the most important factors which determine the yield of an orchard. After the first few years, fertilization regime should be maintained with a balance between fruiting and cropping. Excess fertility often results in excessive vegetative growth, delayed cropping and soft and poorly coloured unmarketable fruit. The goal of HDP is to get the trees into cropping as soon as possible from a limited space. This is best accomplished by following proper pruning and training regime combined with a precocious rootstock to obtained significant production.

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2. Johnson, D.A. (1940). *Plant Microtechnique*. McGraw- Hill Publishing Co. Ltd., New York. PP-29
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4. Rashid, S., Ashraf, M., Bibi, S. and Anjum, R. (2000). Antibacterial and antifungal activities of *Launaea nudicaulis* Roxb. and *Launaea resedifolia* L. *Pakistan J. Biol. Sci.*, **3** (4) :630-632.

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